

310508 - Geographic Information Systems Applied to Urban Planning and Building (Gis and Bim)

Coordinating unit:	310 - EPSEB - Barcelona School of Building Construction	
Teaching unit:	752 - RA - Departamento de Representación Arquitectónica 751 - DECA - Department of Civil and Environmental Engineering	
Academic year:	2019	
Degree:	MASTER'S DEGREE IN BUILDING CONSTRUCTION MANAGEMENT (Syllabus 2015). (Teaching unit Optional)	
ECTS credits:	5	Teaching languages: Spanish

Teaching staff

Coordinator:	Nuñez Andres, M Amparo
Others:	Sanz Conde, M. Mercedes Regot Marimon, Joaquin Manuel Nuñez Andres, Maria Amparo

Degree competences to which the subject contributes

Basic:

CB7. The students must be able to apply the acquired knowledges and their ability of resolution of problems in new or little known environments inside more wide environments (or multidisciplinary) related with their study field.

Specific:

CE02MUGE. Apply information systems in the company.

CE12MUGE. Apply management models suitable for edification processes

Generical:

CG1MUGE. Apply the acquired knowledge in solving complex problems in any sector of the building management.

CG2MUGE. Manage projects in the field of construction.

Transversal:

06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

Teaching methodology

Master class.
Expository/participative class.
Practices.

Learning objectives of the subject

- Modelling of the reality by SIG.
- Know the SIG analysis tools.
- Know the principles of the BIM methodology.
- Understand the BIM processes and the benefits derived from the use of the BIM management.
- Acquire the ability to apply BIM in all the life cycle of the building.
- Be able to design a bussiness model through BIM.



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Study load

Total learning time: 125h	Hours large group:	15h	12.00%
	Hours medium group:	5h	4.00%
	Hours small group:	5h	4.00%
	Guided activities:	10h	8.00%
	Self study:	90h	72.00%

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Content

<p>title english</p>	<p>Learning time: 4h Theory classes: 2h Self study : 2h</p>
<p>Description: Introduction to SIG.</p> <p>Related activities: Activity 1.</p> <p>Specific objectives: Topic of introduction to the subject. Past, present and future of the SIG.</p>	
<p>title english</p>	<p>Learning time: 8h Theory classes: 1h Guided activities: 1h Self study : 6h</p>
<p>Description: - Data sources. - Types: raster, vector. - Quality. - Metadata.</p> <p>Related activities: Activity 2.</p> <p>Specific objectives: Know the different spatial data sources and its treatment inside a SIG. Know and apply the quality control parameters of the spatial data and creation of metadata.</p>	

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title english	Learning time: 32h 30m Theory classes: 1h 30m Laboratory classes: 1h Self study : 30h
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<p>Description:</p> <ul style="list-style-type: none"> - Types of spatial analysis in a SIG. - Spatial relations. Topology. - Questions and operations with data bases. - Basic analytical operations in a vector SIG. - Applications. <p>Related activities:</p> <p>Activity 3.</p> <p>Specific objectives:</p> <ul style="list-style-type: none"> - Know and apply the basic tools of enquiry and analysis of a SIG for vector data. 	
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title english	Learning time: 33h 30m Theory classes: 3h 30m Guided activities: 5h Self study : 25h
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<p>Description:</p> <ul style="list-style-type: none"> - The work with objects. - Organisation of work in BIM. <p>Hierarchy, types and families.</p> <ul style="list-style-type: none"> - Data management and file transfer. <p>Related activities:</p> <p>Activities 4 and 5.</p> <p>Specific objectives:</p> <ul style="list-style-type: none"> Know the principles of the BIM methodology. Understand the BIM processes and the benefits derivated from the use of the BIM management. Acquire the ability to apply BIM to all the cycle of life of the building. Be able to design a business model through BIM. 	
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Planning of activities

name english	Hours: 1h Practical classes: 1h
<p>Description: Work with the software ArcGIS with municipal cartography.</p> <p>Specific objectives: Work with open data of urban management.</p>	
name english	Hours: 5h Practical classes: 2h Self study: 3h
<p>Description: Introduction and management of graphical and alphanumeric data of different sources.</p> <p>Descriptions of the assignments due and their relation to the assessment: Report of the practice.</p>	
name english	Hours: 9h Laboratory classes: 1h Guided activities: 4h Self study: 4h
<p>Description: Learning of the tools for vector analysis.</p> <p>Descriptions of the assignments due and their relation to the assessment: Report of the practice.</p>	
name english	Hours: 14h Theory classes: 1h Laboratory classes: 3h Self study: 10h
<p>Description: Numerical, metric and positional control of objects in BIM.</p> <p>Descriptions of the assignments due and their relation to the assessment: Analysis of a building and data management. Report of the work.</p>	
name english	Hours: 12h Practical classes: 2h Self study: 10h

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Description:

Volumetric modelling of data management.

Descriptions of the assignments due and their relation to the assessment:

Report of the work.

Qualification system

The student will be evaluated by the fulfilment of the individual deliverable practices

Bibliography

Basic:

BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. 2nd ed. Hoboken (New Jersey): Wiley,, 2011. ISBN 9780470541371.

Bosque Sendra, Joaquín. Sistemas de información geográfica. 2a ed. Madrid: Rialp, 1997. ISBN 8432131547.

Moreno, Antonio. Sistemas y análisis de la información geográfica : manual de autoaprendizaje con ArcGIS. 2a ed. Madrid: RA-MA, 2007. ISBN 9788478978380.